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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/616,643 | 07/14/2000 | Caleb E. Welton | 1958.2004-000 | 6573 |
| 21005 | 7590 | 01/11/2006 | EXAMINER | |
| HAMILTON, BROOK, SMITH & REYNOLDS, P.C. 530 VIRGINIA ROAD P.O. BOX 9133 CONCORD, MA 01742-9133 | | | ALAM, SHAHID AL | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2162 | |

DATE MAILED: 01/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/616,643

Applicant(s)

WELTON ET AL.

Examiner

Shahid Al Alam

Art Unit

2162

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-62 is/are pending in the application.
- 4a) Of the above claim(s) 1-18, 24-36, 38, 40-48, 52-54 and 62 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19, 37, 39, 49 - 51 and 55 - 61 is/are rejected.
- 7) ☒ Claim(s) 20-23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1 – 62 are pending in this Office action.

Response to Arguments

2. Applicant's election with traverse of Group II, claims 19 – 23, 37, 39, 49 – 51 and 55 - 59 in the reply filed on July 21, 2004 is acknowledged.

The traversal is on the ground(s) that there is no distinctness between Group I, II and III based on a plurality of features in the Specification and that all three groups belongs to Class 707. This is not found persuasive because:

As set forth in MPEP 802.01, Meaning of "Independent" and "Distinct":

INDEPENDENT

The term "independent" (i.e., not dependent) means that there is no disclosed relationship between the two or more subjects disclosed, that is, they are unconnected in design, operation, or effect, for example: (1) species under a genus which species are not usable together as disclosed; or (2) process and apparatus incapable of being used in practicing the process.

DISTINCT

The term "distinct" means that two or more subjects as disclosed are related, for example, as combination and part (subcombination) thereof, process and apparatus for its practice, process and product made, etc., but are capable of separate manufacture, use, or sale as claimed, AND ARE PATENTABLE (novel and unobvious) OVER EACH OTHER (though they may each be unpatentable because of the prior art). It will be noted that in this definition the term related is used as an alternative for dependent in referring to subjects other than independent subjects.

It is further noted that the terms "independent" and "distinct" are used in decisions with varying meanings. All decisions should be read carefully to determine the meaning intended.

As set forth in MPEP 806, Determining Distinctness or Independence.

The general principles relating to distinctness or independence may be summarized as follows:

- (A) Where inventions are independent (i.e., no disclosed relation therebetween), restriction to one thereof is ordinarily proper, MPEP § 806.04 - § 806.04(i), though a reasonable number of species may be claimed when there is an allowed (novel and unobvious) claim generic thereto. 37 CFR 1.141, MPEP § 809.02 - § 809.02(e).
- (B) Where inventions are related as disclosed but are distinct as claimed, restriction may be proper.
- (C) Where inventions are related as disclosed but are not distinct as claimed, restriction is never proper.

The method of storing data values in a multidimensional database of Group I (claims 1 – 18, 36, 38, 40 – 48 and 52 – 54), and the method of storing data values in a multidimensional database of Group II (claims 19 – 23, 37, 39, 49 – 51 and 55 – 59) are two independent method claims of storing data values in a multidimensional database, because they are unconnected in design, operation and effect as shown below.

Group I teaches a method of storing data value in a multidimensional database, **storing the data value based on the hierarchy and value retrievable by a single fetch operation** while Group II teaches a method of storing the data values in proximity to associated data values, the **data value comprising aggregated values and detail values and aggregating at least one of the dimensions having a hierarchy by traversing each of the aggregate values included in the dimension.**

The system for storing and accessing a multidimensional database of Group III comprising a cache, a database engine, a kernel for manipulating data values and a sparsity manager for determining a storage organization of the data values.

As seen above, the claimed invention of Group III is totally different from the claimed invention of Group I and Group II because of the particular features of Group III.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 19, 37, 39, 49 – 51 and 55 – 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 5,943,677 issued to Grant Hicks ("Hicks") and in view of U.S. Patent Number 6,493,718 issued to Cristian Petculescu et al. ("Petculescu").

With respect to claims 19, 37 and 39, Hicks teaches a method of storing data values in a multidimensional database (column 9, lines 63 – 64) comprising:

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identifying a plurality of dimensions, wherein each of the dimensions is indicative of a plurality of storage locations (column 1, lines 21 – 23);

indicative of an association between the attributes (column 4, lines 54 – 67 and Table 1 indicate association between time, region and product);

attributing a plurality of data values to each of the attributes and storing the data values on a storage medium based on the data values (column 1, lines 23 – 30),

storing the data values on a storage medium based on the data values and stored on a storage medium in proximity to associated data values (see Figure 3A, column 4, lines 40 – 44), wherein associated values (column 4, lines 40 – 49), are attributed to associated attributes, in term of storage . . . associated data values . . . (column 2, lines 34 – 39), the data values further comprising aggregate values and detail values (see Figure 3A and 3B, column 4, lines 43 – 59);

aggregating at least one of the dimensions (see Figure 3A and 3B, column 4, lines 43 – 59, Hicks); and

in an aggregation total, the associated data values corresponding to the aggregate value (see L3 of Figure 3B, column 4, lines 44 – 49).

Hicks teaches a multi-dimensional databases having different levels and dimensions.

Hicks does not explicitly teach identifying a hierarchy of attributes within at least one of the dimensions as claimed.

Petculescu discloses claimed hierarchy of attributes within at least one of the dimensions (column 2, lines 55 – 64 and column 7, lines 9 - 19; Petculescu).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Petculescu with Hicks to reduce the number of roundtrips to the OLAP server, yet weights this benefit with the costs of high-volume database queries (column 2, lines 31 – 33; Petculescu).

As to claims 49 and 55, the data values further comprise aggregate values and detail values (see Figure 3A and 3B, column 4, lines 43 – 59, Hicks).

As to claims 50 and 56, the association is a parent-child association between an aggregate value and at least one child data value (see Figure 3B, Hicks).

As to claims 51 and 57, the association is between an aggregate value and at least one data value (see Figure 3B, Hicks).

As to claim 58, each of the data values associated with an aggregate value are stored proximate to the other data values associated with the same aggregate value (see Figure 3A, column 4, lines 40 – 44, Hicks).

As to claim 59, storing the aggregate value on the storage medium adjacent to the associated data values (column 4, lines 40 – 49, Hicks).

4. Claims 60 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 5,943,677 issued to Grant Hicks ("Hicks") and in view of U.S. Patent Number 6,493,718 issued to Cristian Petculescu et al. ("Petculescu") and further in view of U.S. Patent Number 5,404,510 issued to Gregory S. Smith et al. (hereinafter "Smith").

Hicks and Petculescu do not explicitly teach data values are retrievable by a single fetch operation as claimed.

Smith teaches claimed data values that are retrievable by a single fetch operation (column 10, lines 61 – 68; column 15, line 65 – column 16, line 2).

It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to combine Smith with Hicks and Petculescu to reduce the search time to locate a particular record in a I/O operation and to provide efficient operation of the database system.

Allowable Subject Matter

5. Claims 20 – 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:


The prior art made of record does not teach or fairly suggest traversing, for a first aggregate value on a first level, each of the data values on a second level associated with the aggregate value and subsequently traversing each of the other aggregate values on the first level via traversing the data values on a second level associated with the subsequent aggregate value.

Contact Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shahid Al Alam whose telephone number is (571) 272-4030. The examiner can normally be reached on Monday-Thursday 8:00 A.M.- 4:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Breene can be reached on (571) 272-4107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Shahid Al Alam
Primary Examiner
Art Unit 2162

January 6, 2006